



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

11/2

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,307	02/15/2002	Derck Raybould	H0002477	3397
7590	03/24/2004		EXAMINER	
DIPINTO & SHIMOKAJI P.C. 1301 DOVE STREET, SUITE 480 NEWPORT BEACH, CA 92660			OLTMANS, ANDREW L	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/077,307	RAYBOULD ET AL.
	Examiner Andrew L Oltmans	Art Unit 1742
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>		
<b>Period for Reply</b>		
<b>A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.</b>		
<small>         - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.                   - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.                   - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.                   - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).       </small>		
<b>Status</b>		
1) <input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>29 December 2003</u> . 2a) <input type="checkbox"/> This action is <b>FINAL</b> .                            2b) <input checked="" type="checkbox"/> This action is non-final. 3) <input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.		
<b>Disposition of Claims</b>		
4) <input checked="" type="checkbox"/> Claim(s) <u>1-7, 12, 13, 16, 17, 19 and 25-50</u> is/are pending in the application. 4a) Of the above claim(s) _____ is/are withdrawn from consideration. 5) <input checked="" type="checkbox"/> Claim(s) <u>30-38</u> is/are allowed. 6) <input checked="" type="checkbox"/> Claim(s) <u>1-7, 12, 13, 16, 17, 19, 25-29, 39 and 41-50</u> is/are rejected. 7) <input checked="" type="checkbox"/> Claim(s) <u>40</u> is/are objected to. 8) <input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.		
<b>Application Papers</b>		
9) <input type="checkbox"/> The specification is objected to by the Examiner. 10) <input type="checkbox"/> The drawing(s) filed on _____ is/are: a) <input type="checkbox"/> accepted or b) <input type="checkbox"/> objected to by the Examiner. <small>Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).</small> <small>Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).</small> 11) <input type="checkbox"/> The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.		
<b>Priority under 35 U.S.C. § 119</b>		
12) <input type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) <input type="checkbox"/> All    b) <input type="checkbox"/> Some * c) <input type="checkbox"/> None of: 1. <input type="checkbox"/> Certified copies of the priority documents have been received. 2. <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____. 3. <input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).		
<small>* See the attached detailed Office action for a list of the certified copies not received.</small>		
<b>Attachment(s)</b>		
1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) <small>Paper No(s)/Mail Date _____.</small>		
4) <input type="checkbox"/> Interview Summary (PTO-413) <small>Paper No(s)/Mail Date. _____.</small> 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____.		

**DETAILED ACTION**

*Status of the Claims*

1. Claims 1-7, 12-13, 16-17, 19 and 25-50 remain pending in this application. In view of applicant's amendment, reconsideration of the allowable subject matter indicated in the previous Office Action and discovery of new reference Reedy, Jr. 3,807,008, the previously indicated allowable subject matter is now subject to a prior art rejection. In view of the fact that the rejection is a new ground for rejection, this Office Action is NON-FINAL.

*Specification*

2. The amendment filed December 29, 2003 has been entered. It is noted that the amendment October 30, 2003, including the amendment to the specification, has not been entered because the amendment was non-compliant. Because the amendment filed December 29, 2003 does not include amendments to the specification, there has been no amendment to the specification and the amendment to the specification filed in the non-entered amendment of October 30, 2003 has not been considered.

3. The disclosure is objected to because of the following informalities:  
A reference to a U.S. Patent Application appears on page 8 of the specification. The status of the application should be updated.  
Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Petzoldt et al. 5,300,159***

5. Claims 1-2, 4-5, 7, 26, 39 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Petzoldt et al. 5,300,159 (Petzoldt; cited on IDS filed February 15, 2002).

Petzoldt teaches a method of coating a titanium based article to provide corrosion protection and the resultant article (col 2, lines 8-12), wherein the method of forming the coating includes the steps of applying an aluminum coating (i.e. conversion coating) by ion vapor (i.e. gaseous) deposition to a thickness of less than 12 microns, including the range of 2-12 microns (i.e. less than 0.5 mils) (col 4, lines 30-34), wherein the aluminum coated titanium article is heat treated (i.e. separately from aluminum deposition) in air at 1200-1700°F (i.e. 649°C-927°C) (col 4, lines 37), wherein aluminum undergoes a eutectic reaction or interdiffusion to form a titanium aluminide (col 3, lines 51-57), as recited in claims 1-2, 4-5, 7, 39 and 43. Petzoldt teaches the resultant intermetallics as including  $TiAl_3$  (col 3, line 56), as recited in claim 26. Petzoldt teaches the step of cleaning prior to aluminum deposition. The claims do not distinguish over the teachings of Petzoldt.

With respect to the specific mechanism of forming the titanium aluminide claimed (e.g. “aluminum oxidizes to form alumina layer” (claim 1)), the particular mechanism does not

distinguish over the teachings of Petzoldt because one of ordinary skill in the art at the time the invention was made would have considered the invention to have been anticipated because the process steps taught by the reference are the same as the process steps recited in the claims (i.e. heating to a temperature sufficient to cause oxidation in an oxidizing atmosphere (Petzoldt: col 4, lines 37-38)) and therefore one of ordinary skill in the art would expect that the resulting mechanism (i.e. oxidizing and forming of alumina) would necessarily result from the same conditions.

**“Where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best 195 USPQ 430, 433 (CCPA 1977). ‘When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.’ In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best 195 USPQ 430, 433 (CCPA 1977).” see MPEP 2112.01.** [emphasis added by examiner]

With respect to the recitation of a “two-step process” in line 10 of claim 1, the recitation does not distinguish over the teachings of Petzoldt because the disclosure of the oxidizing conditions that oxidize the surface (i.e. the first portion) (Petzoldt: col 4, lines 37-38) and the eutectic reaction or interdiffusion to form a titanium aluminide (i.e. the second portion) (Petzoldt: col 3, lines 51-57) is sufficient to read on the recitation of a “two-step process”. It is further noted that dependent claim 3 recites the transformation (i.e. the “two-step process) as a heating (at a controlled rate), a holding and a cooling (at a controlled rate), wherein the two steps are defined as oxidation and aluminide formation wherein there is only one required heating (i.e. holding) step.

With respect to product-by-process claim 43, the claimed product is rejected in view of Petzoldt, wherein the claimed product is substantially identical to the product taught in Petzoldt.

The process limitations do not lend patentability to the claims. It is well settled that a product-by-process claim defines a product, and that when the prior art discloses a product substantially the same as that being claimed, differing only in the manner by which it is made, the burden falls upon the applicant to show that any process steps associated therewith results in a product materially different from that disclosed in the prior art. See In re Thorpe, (227 USPQ 964), In re Brown, (173 USPQ 685), In re Fessman, (180 USPQ 524) and MPEP 2113.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***International Application WO 98/54531 A1***

7. Claims 1-5, 7, 25-27, 29, 39 and 41-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Application WO 98/54531 A1 (WO '531; cited on IDS filed February 15, 2002).

WO '531 teaches a method of coating a titanium based article, including a brazed article, such as heat exchanger (i.e. claim 25, 44 and 48) to provide corrosion protection and the resultant article (abstract), wherein the method of forming the coating includes the steps of applying an aluminum coating (i.e. conversion coating) by gaseous deposition by PVD or LTCVD to a thickness of less than 12 microns, including the range of 2-12 microns (i.e. 1-40 microns) (page 8, first full paragraph), wherein the aluminum coated titanium article is heat

treated (i.e. separately from aluminum deposition) vacuum to around 1200°F (i.e. 649°C) with a hold and with a heating from 1000°F (i.e. 538°C) to the hold temperature and a cooling back down to 1000°F (page 9, first full paragraph), wherein aluminum undergoes a interaction with the titanium substrate to form a titanium aluminide (page 8, first full paragraph), as recited in claims 1-5, 7, 25-27, 29, 39 and 41-50 (page 8):

More particularly oxidation of the titanium or braze clad titanium is prevented by a coating 30 that can be applied to protect or transform the titanium surface. In this example conversion coating in a gaseous phase can be applied to and deposited on an assembled and brazed heat exchanger assembly to ensure coverage of all of the exposed parts of the complex heat exchanger configuration. This coated assembly is then heat treated in a vacuum furnace (not shown) to activate the conversion coating and transform the titanium into an oxidation resistant titanium aluminide with an alumina surface, which also prevents oxidation. In this example the gaseously deposited conversion coating can be aluminum in a thickness of 1-40 microns. Upon heat treatment and activation, the aluminum interacts with the titanium to form an oxidation resistant titanium aluminide. The resultant coating provides oxidation resistance both at 1300 and 1400°F

WO '531 teaches that the heat treatment results in an oxidation of the aluminum layer and formation of aluminum oxide (i.e. alumina) during the interaction with the titanium substrate (page 9, lines 1-5), as recited in claims 1 and 25.

WO '531 fails to meet all the limitations of the instant claims in that WO '531 does not explicitly teach the exact range of thickness, the exact temperatures of heat treatment, the alumina and aluminide layer thickness or the hold time for the heat treatment for aluminide formation.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the thickness of the aluminum layer

taught by the reference overlaps that of the instant claims, In re Peterson, 65 USPQ2d 1379, In re Malagari, 182 USPQ 549, and MPEP 2144.05.

With respect to the heat treatment temperatures, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the temperatures taught by the reference overlap or are so near so as to be expected to have the same effect as that of the instant claims, In re Malagari, 182 USPQ 549, Titanium Metals v. Banner, 227 USPQ 773 and MPEP 2144.05.

With respect to the recitation of a “two-step process” in line 10 of claim 1, the recitation does not distinguish over the teachings of WO ‘531 because the disclosure of the oxidizing conditions that oxidize the surface (i.e. the first portion) ((WO ‘531 page 9, lines 1-5) and the formation of the titanium aluminide (i.e. the second portion) (WO ‘531: page 8, lines 12-14) is sufficient to read on the recitation of a “two-step process”. It is further noted that dependent claim 3 recites the transformation (i.e. the “two-step process) as a heating (at a controlled rate), a holding and a cooling (at a controlled rate), wherein the two steps are defined as oxidation and aluminide formation wherein there is only one required heating (i.e. holding) step.

With respect to the time for the formation of the aluminide layer, one of ordinary skill in the art would have found the time obvious because WO ‘531 teaches the same process step, wherein a eutectic transformation takes place to form the aluminide layer and one of ordinary skill in the art would allow the process to proceed for an appropriate time, including a time for 5 minutes to 2 hours, so as to form the aluminide that is disclosed in WO’531.

With respect to the thickness of the alumina and aluminide layer, including  $TiAl_3$ , one of ordinary skill in the art at the time the invention was made would have considered the invention

to have been obvious because the process steps taught by the reference are the same as the process steps recited in the claims (i.e. heating to a temperature sufficient to cause oxidation in an oxidizing atmosphere (WO '531 page 9, lines 1-5) and the formation of the titanium aluminide (WO '531: page 8, lines 12-14)) and therefore one of ordinary skill in the art would expect that the products resulting from the process taught by the reference would be the same as the product resulting from applicant's claimed process, including the thickness of the product's oxide (i.e. alumina) and aluminide layer.

**"Where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes,** a prima facie case of either anticipation or obviousness has been established, *In re Best* 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best* 195 USPQ 430, 433 (CCPA 1977)." see MPEP 2112.01. [emphasis added by examiner]

With respect to product-by-process claim 43, the claimed product is rejected in view of WO '531, wherein the claimed product is substantially identical to the product taught in WO '531. The process limitations do not lend patentability to the claims. It is well settled that a product-by-process claim defines a product, and that when the prior art discloses a product substantially the same as that being claimed, differing only in the manner by which it is made, the burden falls upon the applicant to show that any process steps associated therewith results in a product materially different from that disclosed in the prior art. See *In re Thorpe*, (227 USPQ 964), *In re Brown*, (173 USPQ 685), *In re Fessman*, (180 USPQ 524) and MPEP 2113.

***Petzoldt et al. 5,300,159***

8. Claims 3, 16, 19, 27, 41-42, 44-46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petzoldt et al. 5,300,159 (Petzoldt).

Petzoldt teaches and is applied as set forth above in paragraph 5.

Petzoldt fails to meet all the limitations of the instant claims in that Petzoldt does not explicitly teach the exact heat treatment temperatures, the alumina layer thickness or the hold time for the heat treatment for aluminide formation.

With respect to the heat treatment temperatures, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the temperatures taught by the reference overlap or are so near so as to be expected to have the same effect as that of the instant claims, In re Malagari, 182 USPQ 549, Titanium Metals v. Banner, 227 USPQ 773 and MPEP 2144.05.

With respect to the thickness of the alumina and aluminide layer, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the process steps taught by the reference are the same as the process steps recited in the claims (i.e. heating to a temperature sufficient to cause oxidation in an oxidizing atmosphere (Petzoldt: col 4, lines 37-38) and the eutectic reaction or interdiffusion to form a titanium aluminide (i.e. the second portion) (Petzoldt: col 3, lines 51-57)) and therefore one of ordinary skill in the art would expect that the products resulting from the process taught by the reference would be the same as the product resulting from applicant's claimed process, including the thickness of the product's oxide (i.e. alumina) and aluminide layer.

**"Where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best 195 USPQ 430, 433 (CCPA 1977)." see MPEP 2112.01. [emphasis added by examiner]**

With respect to the time for the formation of the aluminide layer, one of ordinary skill in the art would have found the time obvious because Petzoldt teaches the same process step,

wherein a eutectic transformation takes place to form the aluminide layer and one of ordinary skill in the art would allow the process to proceed for an appropriate time, including a time for 5 minutes to 2 hours, so as to form the aluminide that is disclosed in Petzoldt.

*Petzoldt et al. 5,300,159 and International Application WO 98/54531 A1 in view of Marder, Arnold "Effects of Surface Treatments on Material Performance: Deposition Surface Treatments", ASM Handbook, Volume 20, 1997, pages 1-18*

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Petzoldt et al. 5,300,159 (Petzoldt) and International Application WO 98/54531 A1 (WO '531) in view of Marder, Arnold "Effects of Surface Treatments on Material Performance: Deposition Surface Treatments", ASM Handbook, Volume 20, 1997, pages 1-18 (ASM Handbook).

Petzoldt and WO '531 teach and are applied as set forth above in paragraphs 5, 7 and 8.

Petzoldt and WO '531 fail to meet all the limitations of the instant claims in that Petzoldt and WO '531 do not explicitly teach the temperatures of deposition.

ASM Handbook teaches the temperatures of deposition for PVD processes, such as the processes taught in both Petzoldt and WO '531, wherein the temperatures are within the range of the temperatures claimed for the application of the aluminum conversion coating ("Physical Vapor Deposition", Table 15, page 13).

One of ordinary skill in the art would have found claim 6 obvious because one of ordinary skill in the art would have found the particular temperatures claimed are temperatures conventionally used for the processes taught in Petzoldt and WO '531, as taught in the ASM Handbook ("Physical Vapor Deposition", Table 15, page 13).

***Petzoldt et al. 5,300, 159 and International Application WO 98/54531 A1 in view of Reedy, Jr.***

***3,807,008***

10. Claims 12-13, 17, 19 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petzoldt et al. 5,300,159 (Petzoldt) and International Application WO 98/54531 A1 (WO '531) in view of Reedy, Jr. 3,807,008 (Reedy, Jr.).

Petzoldt and WO '531 teach and are applied as set forth above in paragraphs 5, 7 and 8.

Petzoldt fails to meet all the limitations of the instant claims in that Petzoldt does not explicitly teach the cleaning with dilute KOH.

Reedy, Jr. teaches that cleaning titanium prior to coating is well known in the art. In particular, Reedy, Jr. teaches that the adherence of coating and the substrate is increased when the substrate is cleaned (col 4, lines 22-26). A cleaning agent known by the skilled artisan includes potassium hydroxide (KOH) (col 4, lines 41-42).

One of ordinary skill in the art at the time that the invention was made would have found cleaning to be a well-known step prior to coating, wherein one of ordinary skill in the art of ordinary skill in the art would be motivated to use any well-known cleaning agent, including KOH (Reedy, Jr.: col 4, lines 41-42) in order to provide a surface suitable for coating and wherein the adherence of the coating to the substrate is increased, as taught in Reedy, Jr. (col 4, lines 22-26):

***Petzoldt et al. 5,300, 159 in view of Reedy, Jr. 3,807,008***

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Petzoldt et al. 5,300,159 (Petzoldt) and International Application WO 98/54531 A1 (WO '531) in view of Reedy, Jr. 3,807,008 (Reedy, Jr.).

Petzoldt is applied as set forth above in paragraph 5 and 7.

WO '531 fails to meet all the limitations of the instant claims in that WO '531 does not explicitly teach the cleaning with dilute KOH.

Reedy, Jr. teaches that cleaning titanium prior to coating is well known in the art. In particular, Reedy, Jr. teaches that the adherence of coating and the substrate is increased when the substrate is cleaned (col 4, lines 22-26). A cleaning agent known by the skilled artisan includes potassium hydroxide (KOH) (col 4, lines 41-42).

One of ordinary skill in the art at the time that the invention was made would have found cleaning to be a well-known step prior to coating, wherein one of ordinary skill in the art of ordinary skill in the art would be motivated to use any well-known cleaning agent, including KOH (Reedy, Jr.: col 4, lines 41-42) in order to provide a surface suitable for coating and wherein the adherence of the coating to the substrate is increased, as taught in Reedy, Jr. (col 4, lines 22-26).

#### *Allowable Subject Matter*

12. Claims 30-38 are allowed.
13. Claim 40 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
  - a. A primary reason for the allowance of claims 30-35 is that the prior art fails to teach or suggest, either alone or in combination, the instantly claimed method wherein the method includes both of the claimed steps, wherein the process step of oxidizing a

first portion of the aluminum at a first temperature and the step of reacting a second portion to form a titanium aluminide beneath the alumina layer at a second temperature that is higher than the first temperature.

b. A primary reason for the allowance of claim 40 is that the prior art fails to teach or suggest, either alone or in combination, the instantly claimed method wherein the method includes the claimed rate of heating and the claimed rate of cooling.

#### ***Response to Arguments***

14. Although the amendment of October 30, 2003 has not been entered, the examiner has considered the arguments set forth therein. Applicant's arguments have been fully considered but they are not persuasive. The amendment filed December 29, 2003 has been entered. Claims 1-7, 12-13, 16-17, 19 and 25-50 remain pending in this application. In view of applicant's amendments and newly presented claims, the rejections presented in the previous Office Action have been maintained and amended, as appropriate. In view of the new ground for rejection, this Office Action is NON-FINAL.

15. With respect to applicant's arguments drawn to Petzoldt and WO '531 on pages 18-22 of applicant's response, the arguments are not found persuasive. Applicant's arguments attempt to distinguish Petzoldt and WO '531 on the basis of "controlled" heat treatment and cooling steps. Applicant further argues that the treatments taught in the references either are inappropriate temperatures or two difference temperatures. The argument is not found persuasive because the limitations recited as differences by applicant are either not claimed or have been indicated as allowable subject matter in paragraph 13, above. The mere recitation of "controlled heating"

does not distinguish over the teachings of the reference because the references are attempting to produce an aluminide, including  $TiAl_3$ . The mere heating to produce the reactions specifically recited in the references (e.g. Petzoldt: col 4, lines 37-38 and Petzoldt: col 3, lines 51-57; WO '531 page 9, lines 1-5 and WO '531: page 8, lines 12-14) is sufficient to read on "controlled heating". Likewise, "controlled cooling" from temperatures suitable for the reactions specifically taught in Petzoldt and WO '531 is sufficient to read on controlled cooling, wherein there are no rates of cooling explicitly claimed. It is further noted that applicant's statements regarding the temperatures of the references being unsuitable is not persuasive since the temperatures are either not claimed or overlap the temperatures explicitly recited in the claims. For example, the applicant argues that the temperature 1200-1700 °F (649-926 °C), in Petzoldt, teaches away; however, the temperature range overlaps the range instantly claimed (see e.g. claim 3: "no more than about 750°C"). For at least all of the above reasons, the arguments are not found persuasive.

16. With respect to applicant's arguments regarding the use of the Marder reference (page 22 of applicant's response), the argument is not found persuasive. The examiner relies upon Marder to establish the temperatures used in PVD surface coating applications. The differences in the line of sight or non-line of sight does not make a difference, because either process meets the limitation of the claimed step of "applying an aluminum conversion coating". Further, the applicant has not argued that the temperatures of the PVD method are not within the temperatures instantly claimed. The examiner maintains that the reference shows that the deposition temperature for the coatings of Petzoldt and WO '531 are known in the art and are

Art Unit: 1742

within the claimed temperature range. For at least all of the above reasons, the arguments are not found persuasive.

***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew L Oltmans whose telephone number is 571-272-1248. The examiner can normally be reached from 7:00 to 3:30, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Andrew L. Oltmans  
Patent Examiner  
Art Unit 1742

/alo